D2-1 Intelligent Tracking Car DIY Kits

1. Introduction.

There is a 16 mm wide black runway in the white field.Our tracking car can drive along the black runway automatically.No matter how the runway is bent, the car can be driven automatically.We all know that the reflectivity is different when the light source to the white objects and black objects.Here we use red light source.The light is reflected through the ground to the photoresistor.By detecting the resistance of the photosensitive resistor can determine whether the car is driving in the white area.If the detection is black runway, then the car to change the direction of driving and motor will slow down or even stop and Red LED OFF on PCB front side.Drive the car in the opposite direction so that the car is always running along the runway.

2. Overview.

1>. Model: D2-1

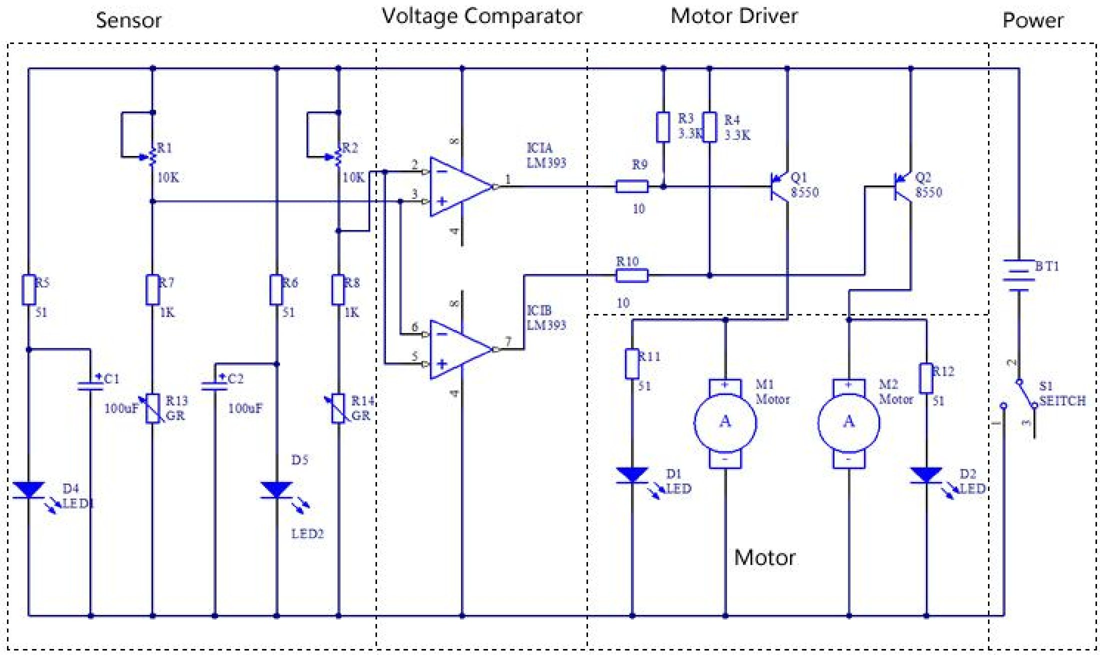
2>. Name: D2-1 Intelligent Tracking Car DIY Kit

3>. PCB Size:105*72*1.6mm

4>.Installation dimension:105*85*46mm

5>. Work Voltage:3V

3. Schematic.

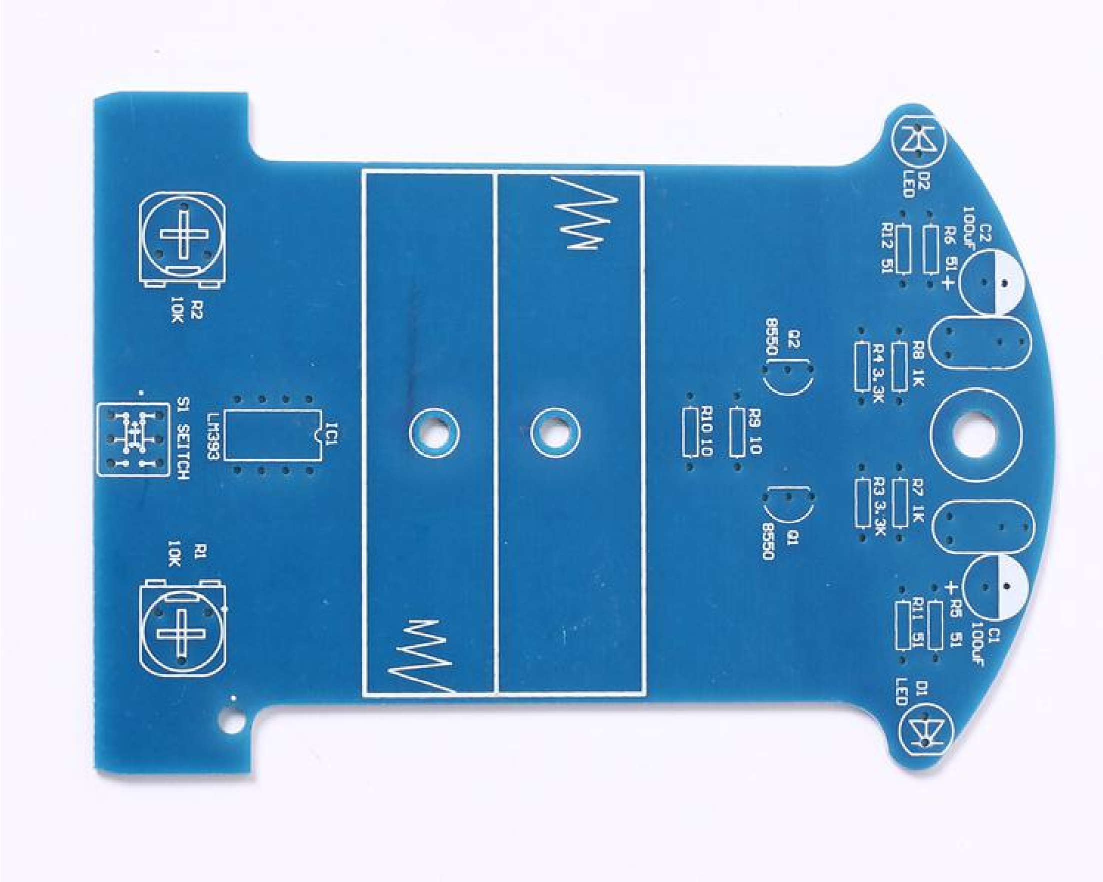


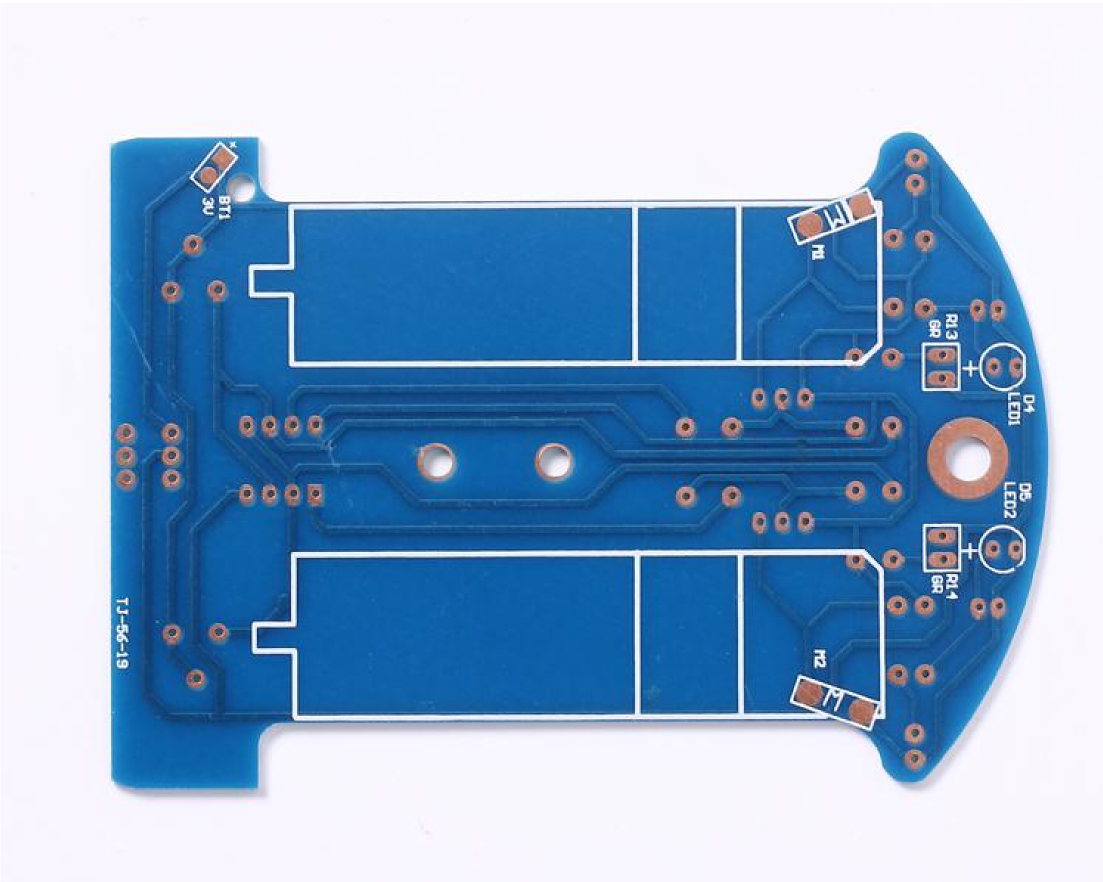
Sensor
Voltage Comparator
Motor Driver
Power
R1
10K
R2
10K
R5
51
R7
1K
R6
51
R8
1K
C1
100uF
R13
GR
C2
100uF
R14
GR
D4
LED1
D5
LED2
ICIA
LM393
ICIB
LM393
R9
10
R10
10
R3
3.3K
R4
3.3K
Q1
8550
Q2
8550
BT1
R11
51
R12
51
M1
Motor
M2
Motor
D1
LED
D2
LED
S1
SEITCH
Motor

4. Component listing.

NO.	Component Name	PCB Marker	Parameter	Quantity
1	LM393	IC1	DIP-8	1
2	IC Socket	IC1	DIP-8	1
3	Electrolytic Capacitor	C1,C2	100uF	2
4	Potentiometer	R1,R2	103 10K	2
5	Metal Film Resistance	R5,R6,R11,R12	51ohm	4
6	Metal Film Resistance	R7,R8	1K	2
7	Metal Film Resistance	R9,R10	10ohm	2
8	Metal Film Resistance	R3,R4	3.3K	2
9	Photoresistor	R13,R14	CDS5	2
10	Red LED	D1,D2	5mm	2
11	White LED	D4,D5	5mm	2
12	S8550	Q1,Q1	TO-92	2
13	Self-Locking switch	S1	6*6mm	1
14	DC Motor	M1,M2		2
15	Wheel		40mm	2
16	Tires		40mm	2
17	Gaster Screw		M5*20mm	1
18	Gaster Nut		M5	1
19	Gaster Screw Cap		M5	1
20	Cable		6mm	4
21	Battery Case		AA*2	1
22	PCB D2-1		105*72*1.6mm	1

5. Installation Steps

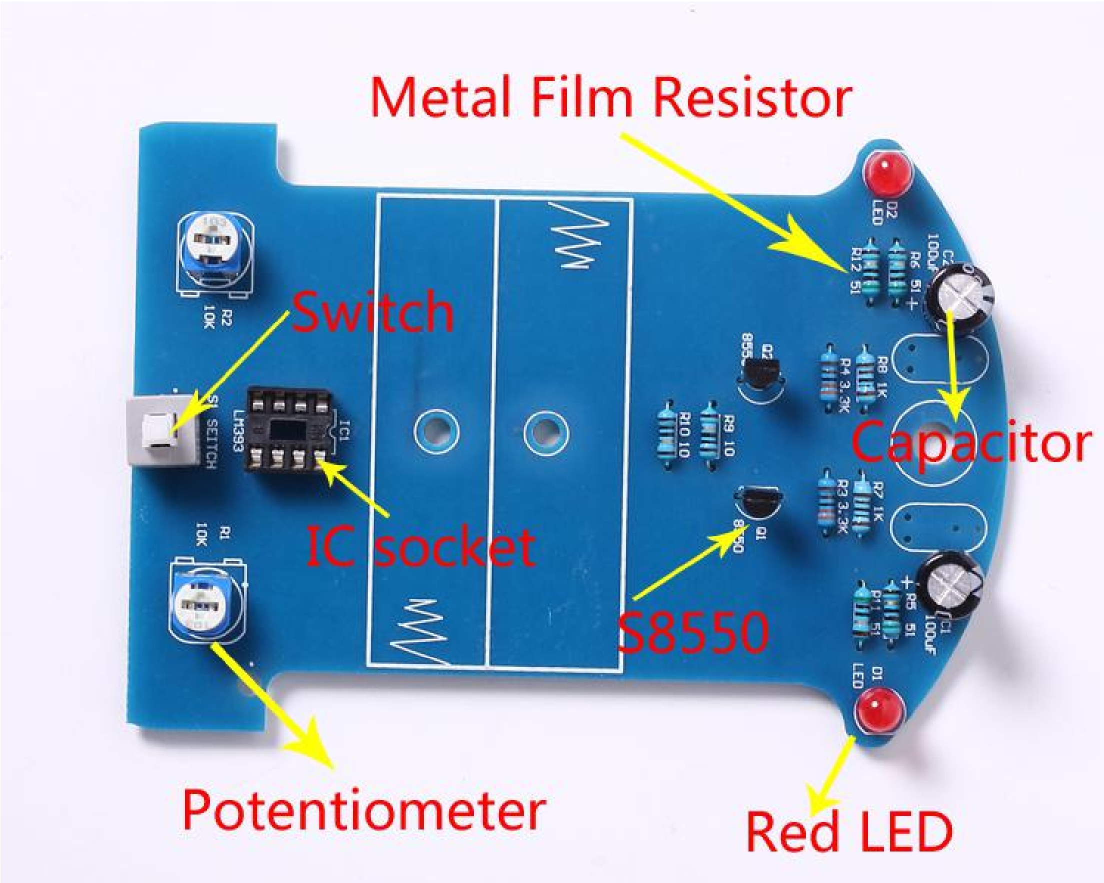

D2
LED
C2
100uF
R6 51
R12 51
R2
10K
Q2
8550
R8 1K
R4 3.3K
S1 SEITCH
IC1
LM393
R9 10
R10 10
R7 1K
R3 3.3K
Q1
8550
R1
10K
C1
100uF
R5 51
R11 51
D1
LED


BT1
3V
M1
R13
6R
D4
LED1
D5
LED2
R14
6R
M2
TJ-56-19

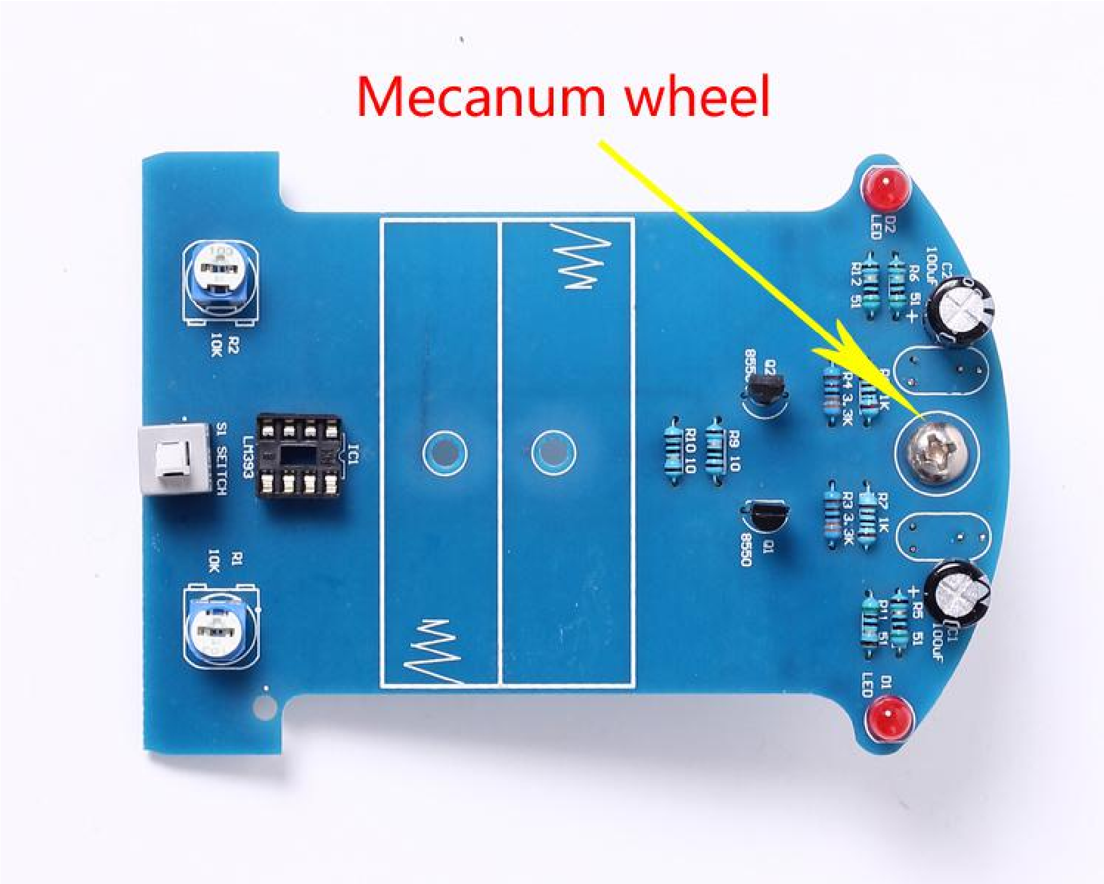
1>. Install metal film resistor,DIP-8P IC socket,Self-Locking switch,Potentiometer,S8550,Electrolytic capacitor,5mm Red LED on PCB according to mark on PCB.

1.1 Pay attention to the direction of IC Socket.

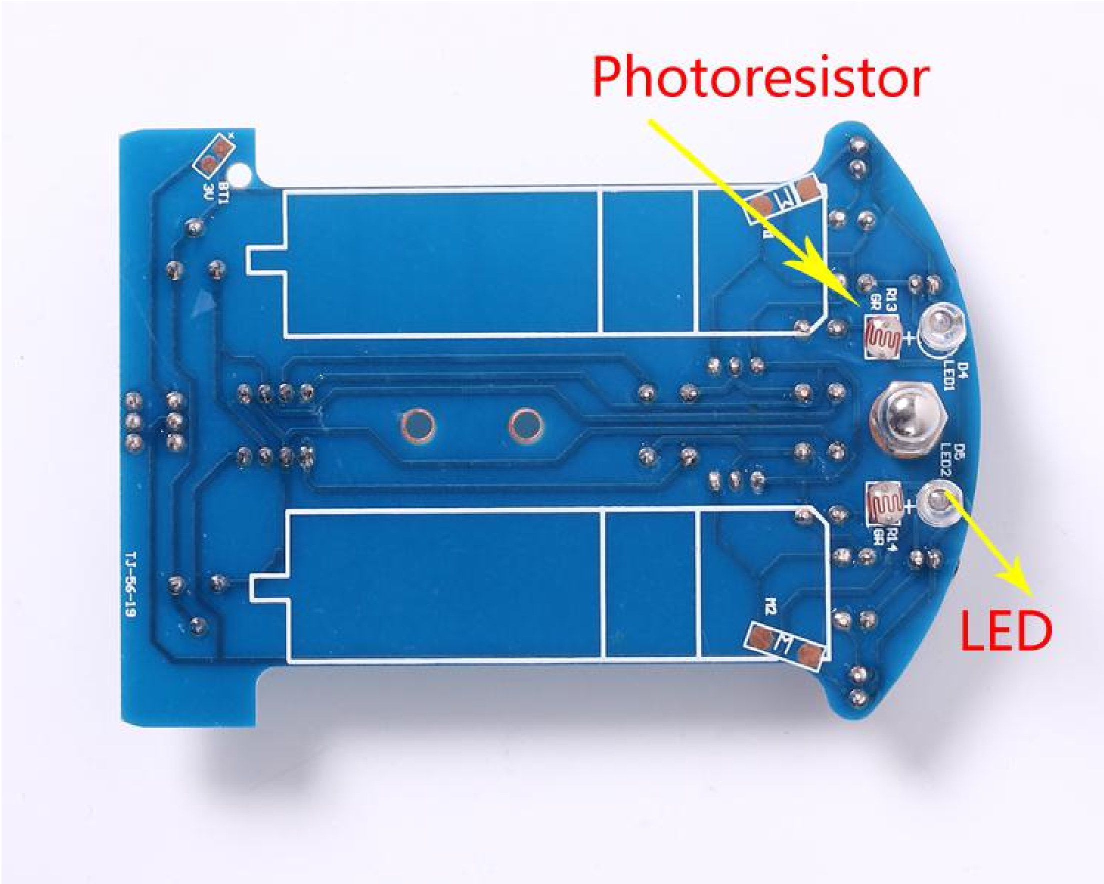
1.2 In addition to facilitate debugging, don't install IC LM393 temporarily .

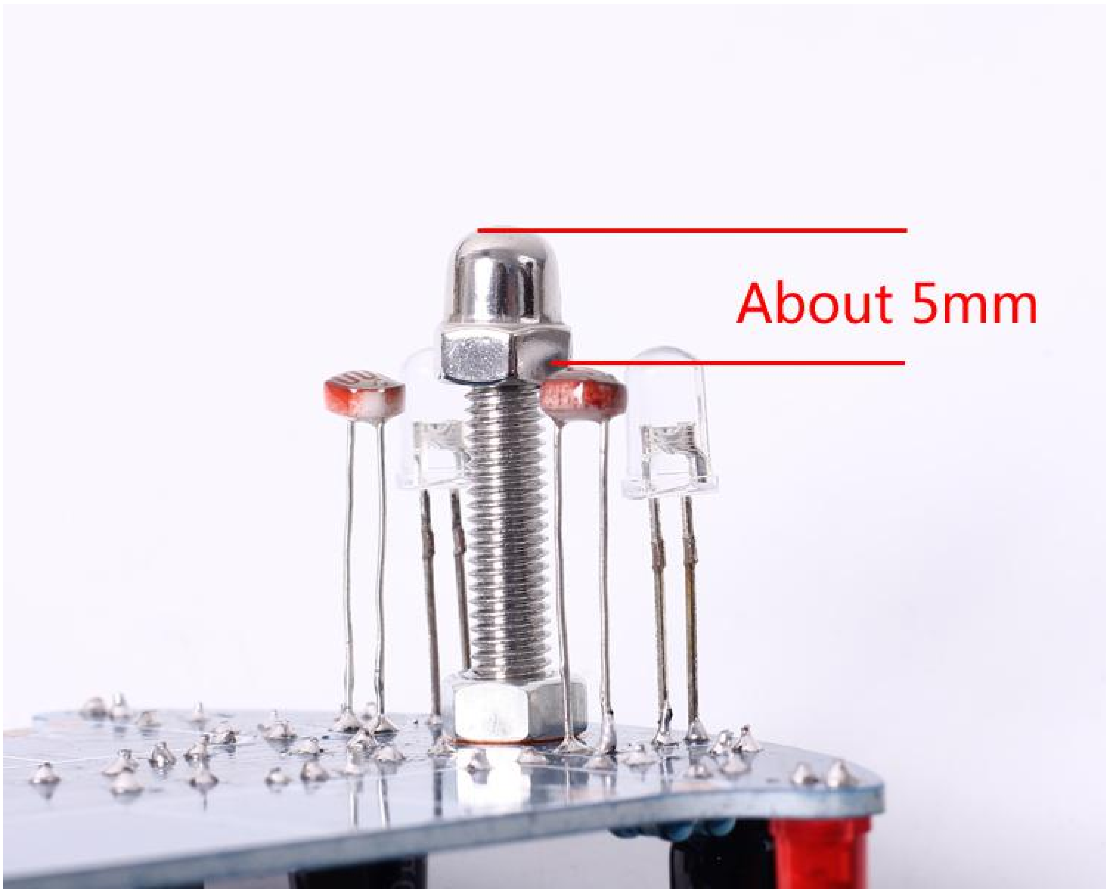


2>. PCB placed in front.The support bolts of the caster are inserted into the hole, tighten the nuts screwed into the caster, and finally fit the caster and tighten.

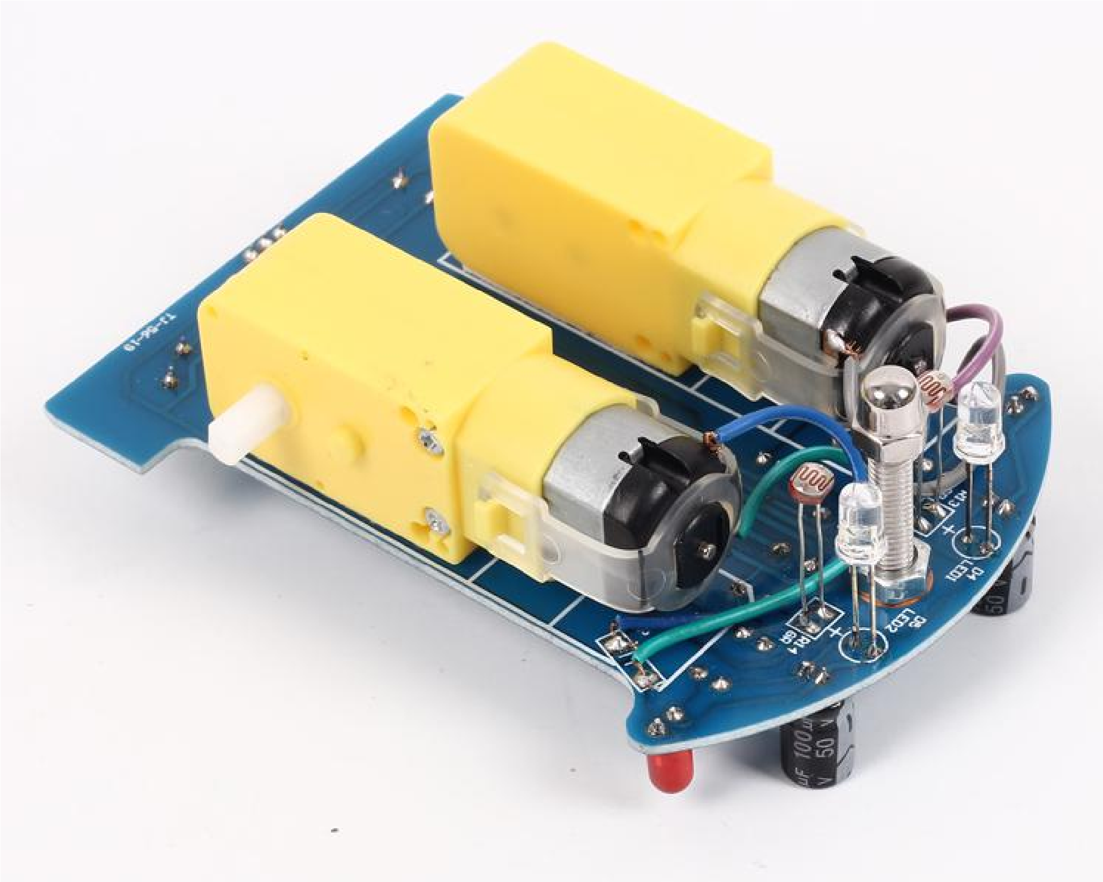


3>. Install photoresistor and white LED on PCB reverse.But please make sure the distance is about 5mm between top of mecanum wheel(top of screw cap top) and photoresistor/LED.

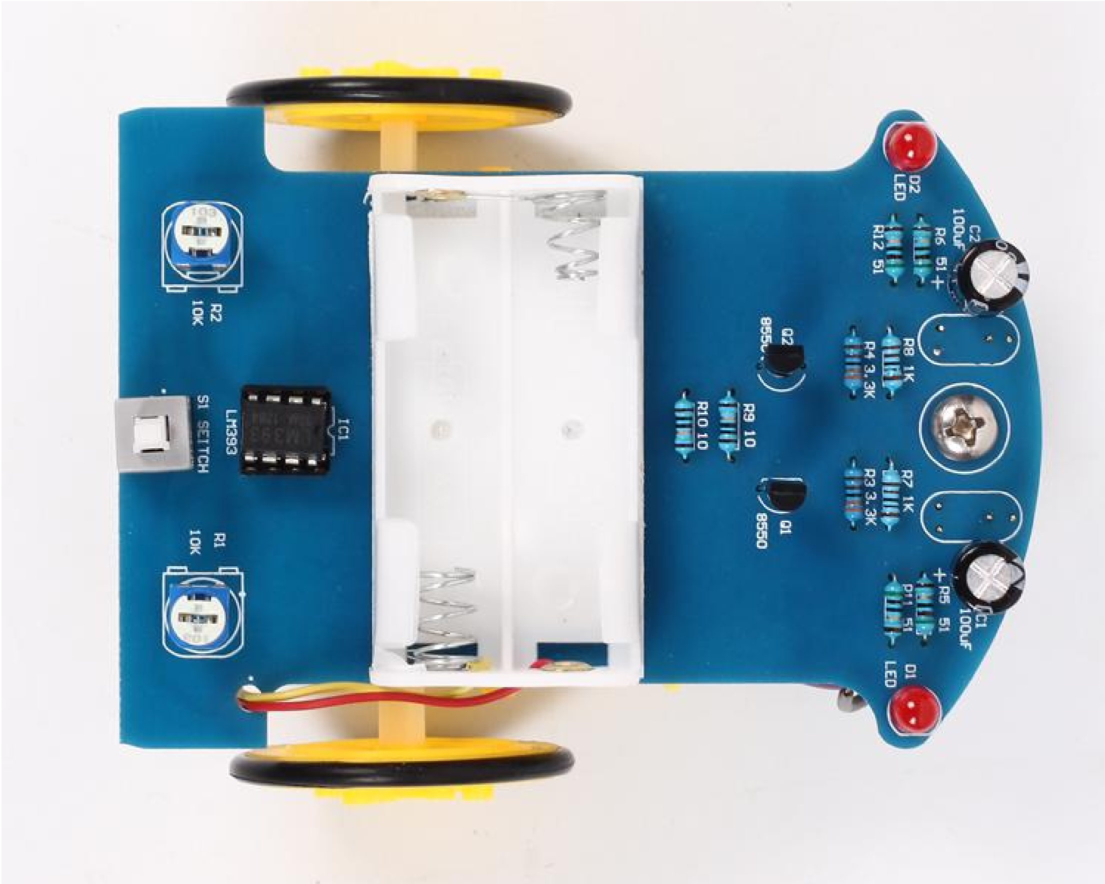

Photoresistor
LED


About 5mm

4>. Install 2pcs Motor.



5>. Install battery case and wheel



6>. Test.

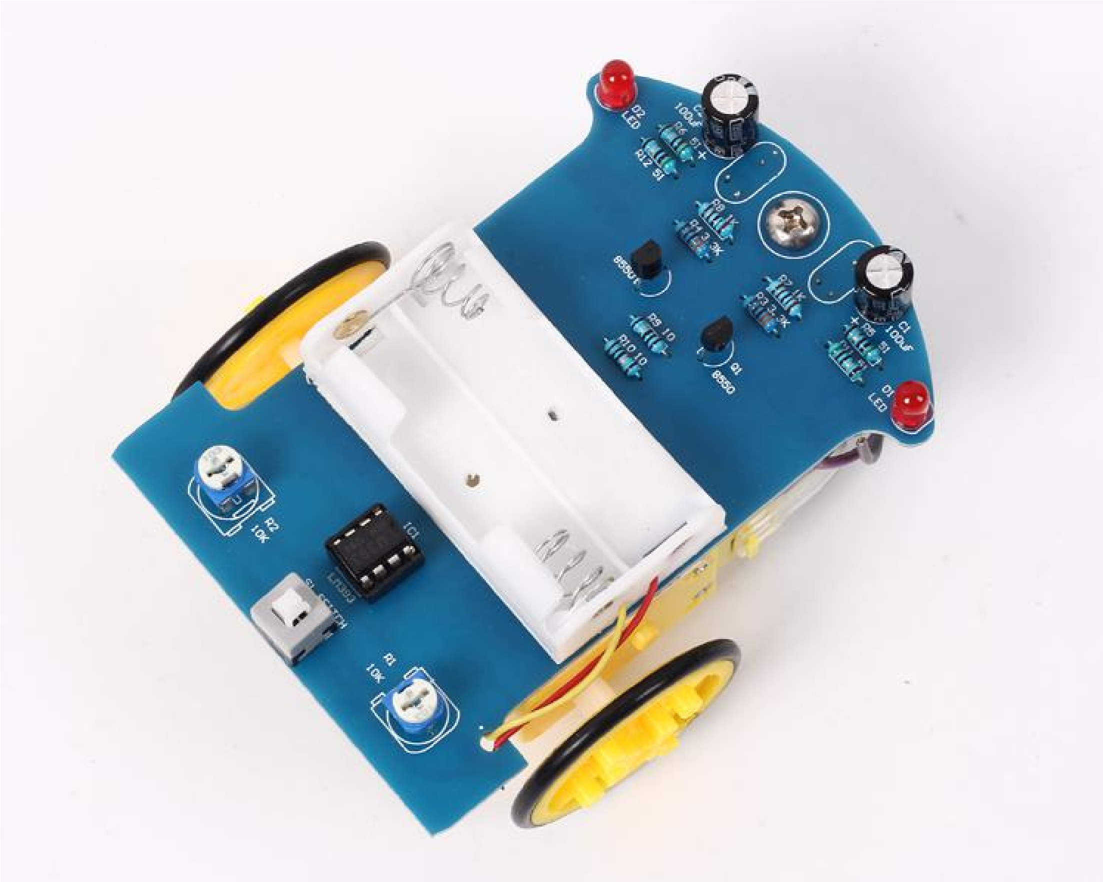
6.1 Install 2pcs AA battery.

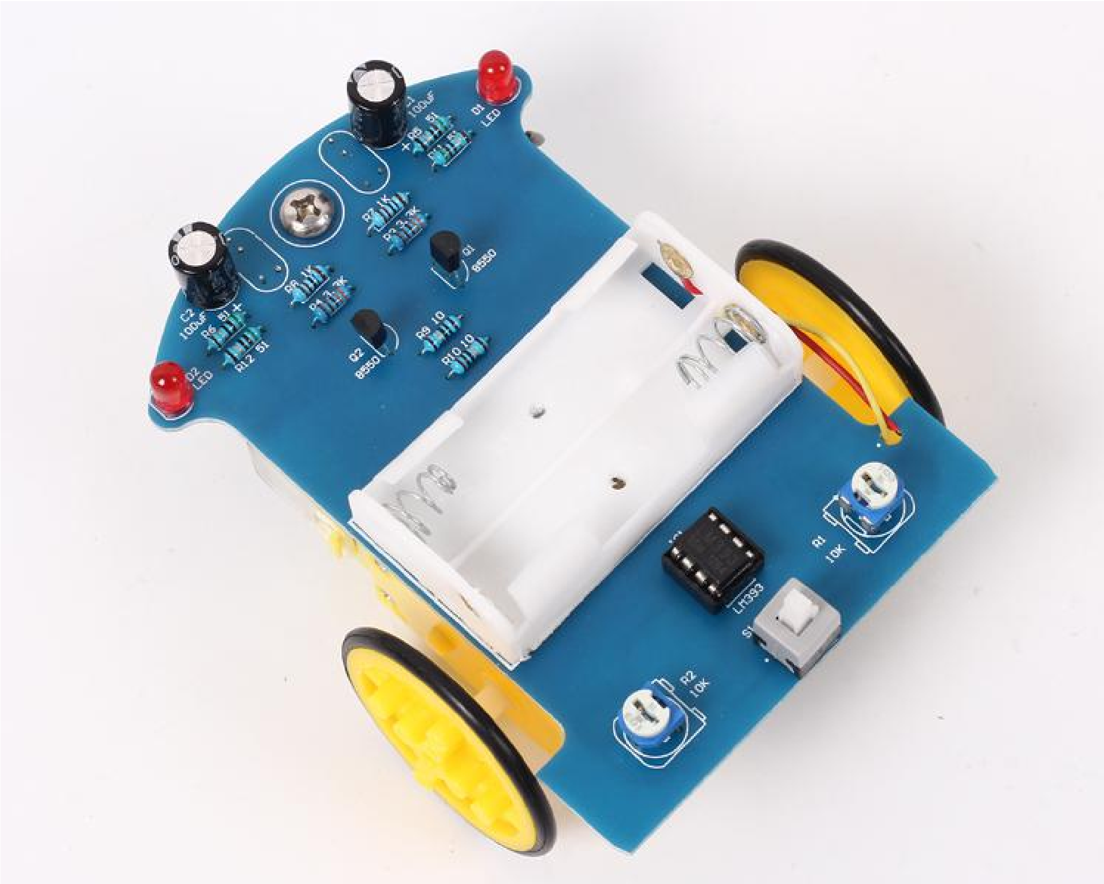
6.2 Press on switch.If 2pcs white LED ON,the installation is successful.If LED off,please check the welding.Pay attention to the direction of LED and other component and check pseudo Soldering.

6.3 Power on.Check S8550 or 10ohm resistor if motor don’t move.

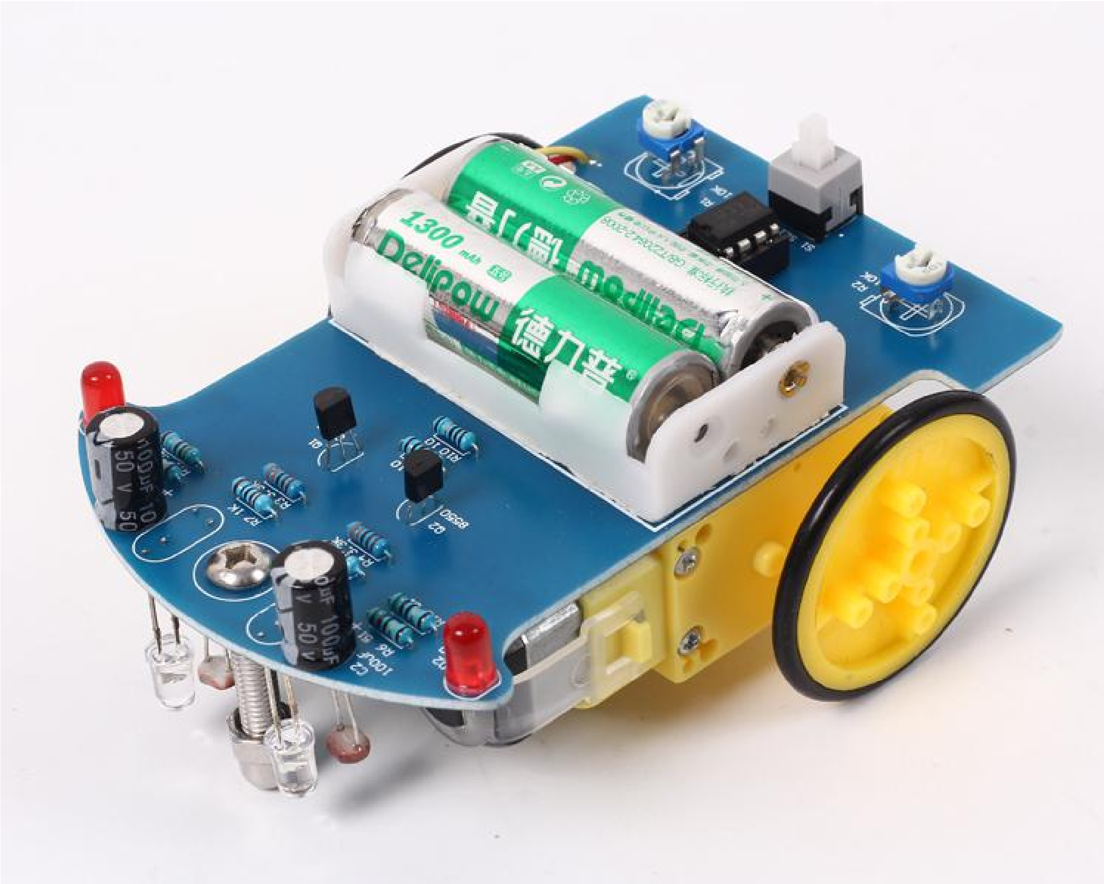
6.4 Install LM393(Pay attention to the direction of IC).

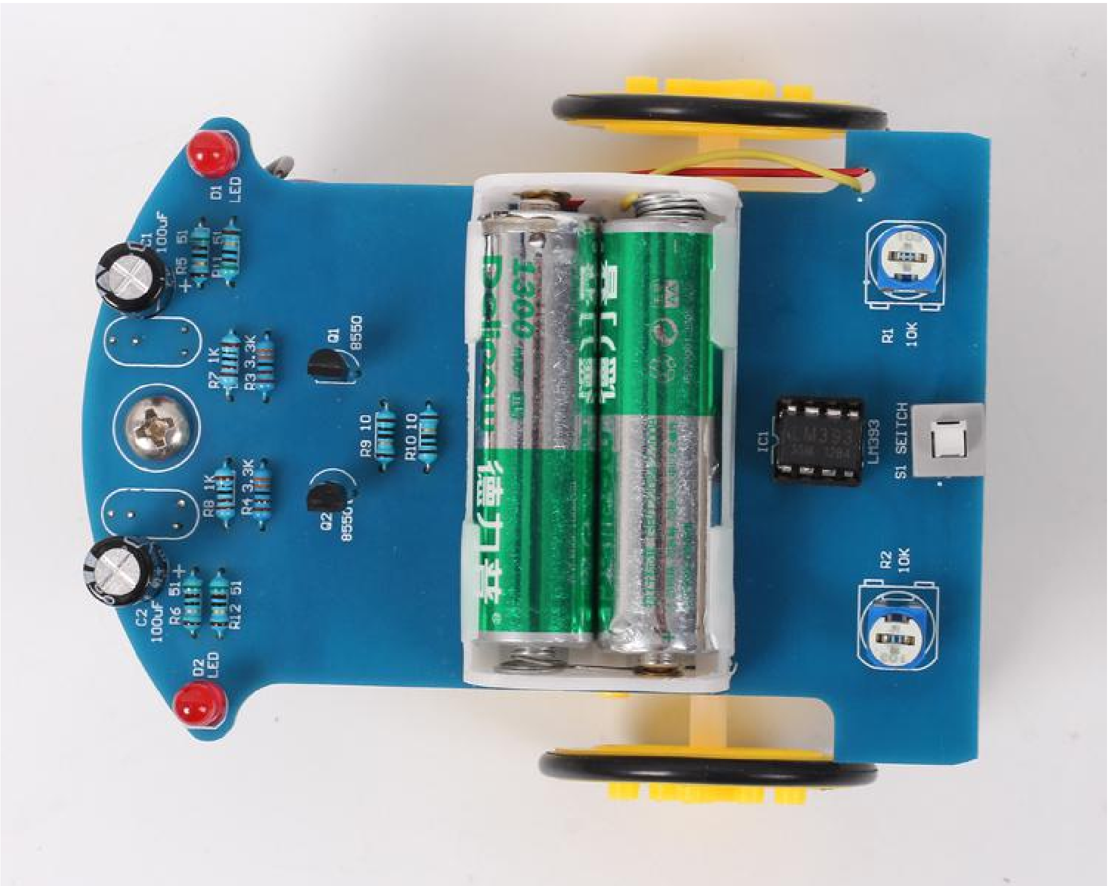
6.Effect demonstration








Delipow
1300 mAh


D1 LED
C1 100uF
R5 51
R11 51
R7 1K
R3 3.3K
Q1 8550
R9 10
R10 10
R8 1K
R4 3.3K
Q2 8550
C2 100uF
R6 51
R12 51
D2 LED
Delipow
1300
R1 10K
IC1
LM393
S1 SEITCH
R2 10K